immediately after the introduction of the instrument. The result was as follows: In one case the tincture was given without any omission, after every introduction of the instrument: no rigors occurred, and the treatment progressed without any interruption, to a successful termination. In the second, the same result occurred. On one occasion the tincture was omitted, as an experiment, and a rigor occurred, followed by its usual consequences. The tincture was resumed, and no rigor again occurred, though the instrument was allowed to remain in the stricture for half an hour or longer. This case also did well, but the man left the Infirmary before the dilatation was fully completed.

In the third case, which was the most severe, no rigor occurred whilst the tincture was given, and the case was progressing favourably. The aconite was, as in the second case, omitted for the sake of experiment, and two introductions of the instrument were effected without the recurrence of rigor. On the third occasion, however, so severe a rigor, and such untoward local and constitutional symptoms experienced, that up to the present moment no further use of the instrument could be attempted. Mr. L. concludes that in the above cases, the tincture of aconite, by its direct sedative power, exerted a powerful influence in preventing the occurrence of rigors, and that in similar cases it may become a valuable addition to the means usually employed.

40. *Lithotritic Instruments in Cases of Enlarged Prostate.*—Mr. WILLIAM COULSON, in an interesting paper (*Lancet*, Jan. 30, 1858), explains the necessity which exists for employing a peculiar lithotrite in patients who have stone and enlargement of the prostate.

"The changes," he remarks, "in the genito-urinary organs produced by enlargement of the prostate, and requiring the use of peculiar lithotritic instruments, may be explained in a few words. Many men who have passed the middle period of life labour under some enlargement of the prostate; and such a condition of the gland seriously interferes with the functions of the bladder; but for my present purpose it will suffice to consider the effects produced on the urethra and floor of the bladder by any considerable swelling of the prostate. A consideration of these effects will at once show in what manner the modified instruments that I employ in such cases are, of necessity, required. A constant effect of prostatic enlargement is elongation of the urethra. This lengthening of the canal may be connected with several conditions of the enlarged gland; it is, however, mainly confined to the prostatic portion of the urethra, and occurs in one of two ways. As the enlargement pushes up the neck of the bladder under the arch of the pubes, it necessarily draws up and elongates the vesical end of the urethra; or, while the gland is slowly enlarging from before backwards, that portion of the urethra which traverses it must necessarily follow the abnormal development of the prostate, and become elongated. In his recent work on the Prostate,[1] Mr. Thompson observes 'that in some preparations which he examined, the urethra measured three inches from the orifice of the bladder to the membranous portion, instead of an inch and a half, which is the normal length.' In all cases of this kind, more especially when the middle lobe is chiefly affected, the orifice of the bladder is thrown backwards in proportion to the development of the enlarged lobe: and hence the point of any instrument used is apt to catch against the superior wall of the canal before it enters the bladder. This is an obstacle which the surgeon is very likely to meet with; and I may add, the shorter the instrument he employs the more likely is the obstacle to occur.

"The effects of the morbid growth on the cavity of the bladder also require some notice. These effects, so far as regards my present subject, will depend on the degree of prostatic enlargement, and on the lobe principally affected. When the enlargement is chiefly confined to the middle lobe of the prostate, which encroaches on the floor of the bladder, the capacity of that viscus at its lower part is proportionably diminished. I have seen a considerable part of the bladder occupied by the enlarged prostate; and, in extreme cases, preparations of which are preserved in our museums, the morbidly developed gland has occupied a great portion of the vesical cavity. In all the cases now alluded to, the effect of this extension of the middle lobe of the prostate backwards is to form a reservoir or sac behind the enlarged gland. The floor of the bladder is here greatly depressed; the urine remains as in a sac; and here a calculus may be lodged, the detection of which is often extremely difficult. I have, at the present time, under treatment, a patient who has a stone concealed behind an enlarged prostate, the existence of which had escaped the notice of those surgeons by whom he had been previously examined.

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[1] The Enlarged Prostate, p. 23. 1858.

"The necessity of employing special sounds and catheters in cases of enlarged prostate is well known to all practitioners. The increased length of the urethra, and the encroachment of the enlarged lobe on the floor of the bladder compel the surgeon to use a much longer catheter than usual. In prostatic enlargement the ordinary catheter will not penetrate into the bladder; and the experienced practitioner at once suspects the existence of the complaint from this circumstance. To enter the cavity of the bladder he takes a catheter from two to four inches longer than the one in ordinary use, and with an instrument of this kind he succeeds after having passed it about twelve inches beyond the orifice of the urethra. The same holds good with regard to the sound. Thus the stem of the ordinary sound measures seven inches and a half; the stem of a moderately-sized prostatic sound measures nine inches and a half. An ordinary catheter, now before me, measures nine inches and three-quarters to the point. A prostatic catheter measures thirteen inches and a half. From fourteen to sixteen inches is the length recommended in standard works.

"In cases of enlarged prostate, then, the surgeon requires a long catheter of peculiar shape to draw off the urine. For the same reason—viz., the increased length of the urethra, and the depression in the floor of the bladder—he will require a long lithotrite of peculiar shape, in order to catch and crush the stone with ease to himself and safety to his patient.

"If the long prostatic catheter be expedient, the long prostatic lithotrite is, *à fortiori*, indispensable. The necessity of employing a longer instrument than usual in such cases will, I imagine, be generally admitted; and if I insist on it here, it is because our standard works do not allude to the point—an omission of which I have been no less guilty than others, and which I would now repair. The ordinary lithotrite of Charrière measures ten inches from the root of the stem to the eye: the chord of the curve, from the eye to the point, is one inch and three-eighths. The long lithotrite, manufactured expressly for me by Charrière, measures twelve inches in the stem, and one inch and three-eighths in the curve. The stem of Weiss's ordinary lithotrite measures nine inches; the stem of the long instrument which he has made for me measures ten inches and a half; the beak is the same length in both, about an inch and a half.

"I need hardly occupy much space in dwelling on the necessity of the surgeon being provided with a long instrument of this kind, and of the many advantages which he will derive from its use. I can only say that I have had cases which, I feel convinced, I could never have conducted to a successful termination without it. It should be remembered, that with an elongated urethra, the distance between the external and internal orifices of the canal is increased by at least an inch. The enlarged prostate, again, occupies the front part of the floor of the bladder, on which it encroaches another inch or more. The calculus lies concealed in a sort of pouch behind the enlarged lobe, which rises like a barrier before it. Under these circumstances, it is evident that the surgeon will require an instrument longer than that in ordinary use by two or three inches; the common lithotrite will either not pass into the cavity of the bladder, or, if it does, after having been forced up to the handle, the motion of its curved part will still be greatly impeded by the prostate.

"In some of my cases the common instruments were not sufficiently long, and it became necessary to push them up to the shoulder before I could turn the point in the necessary direction. With the long lithotrite, on the other hand, the surgeon gets readily into the bladder; but to overcome the impediments likely to arise from an enlarged middle lobe, a peculiarly formed beak is necessary, and the pelvis must be raised.

"The beak or curved part of the lithotrite must be short, and the curve sharp. With an instrument of this kind the surgeon will often be able to 'fish up the stone from the depression behind the enlarged prostate,' in the manner described in the last edition of my work on the Bladder.[1] By turning the point down, and elevating the handle of the instrument, the stone will commonly be found in the position already mentioned. When the middle lobe of the prostate is much enlarged, and extends some way into the bladder, the point of the instrument cannot be turned downwards in such a way as to reach the stone. The plan from which I have derived most benefit in such cases is that of raising the pelvis of the patient in such a way, that the calculus shall be displaced towards the posterior wall of the bladder. Especial care must be taken that the pelvis itself is raised, and not merely the lower extremities. By adopting this plan, I have, on several occasions, immediately caught the calculi, which lay concealed behind the prostate as long as the patient retained the ordinary position. Every lithotrity couch should be provided with some mechanical contrivance for executing this proceeding quickly. The sufferings occasioned by the attempt to seize a stone behind an enlarged prostate, in the ordinary way, and after strong elevation of the handle, are often of the most distressing kind, and cannot certainly contribute to the well-doing of the patient. On the other hand, the ease with which the reversed beak falls on the stone is remarkable; but the manipulation requires a cautious and practised hand."

41. *Extraction of a Fragment of Gutta Percha Bougie from the Urinary Bladder by means of the Lithotrite.*—Mr. Holmes Coote relates the following interesting example of this:—

Mr. P., about thirty years of age, was passing for himself a full-sized gutta percha bougie, October 9, 1857, when the instrument broke between four and five inches from the distal extremity, and he found, upon withdrawal, that a fragment of that length was left in the urethra. He immediately called in a surgeon, who endeavoured, by cutting into the urethra from the perineum, to seize the bougie; but while operating, he perceived, and the patient himself felt, a sort of spasmodic action of the urethra, and the whole fragment was drawn into the bladder. The patient came to town a fortnight after the accident, and called on me in good health, but in considerable agitation and distress. He said that hitherto he had experienced but little inconvenience, although there was an uneasy and sometimes painful sensation after the evacuation of the bladder, and occasionally a painful feeling referred to the glans penis. The urine was clear, and he could retain it the usual time. I sounded this gentleman, and immediately felt the piece of bougie, which appeared to lie transversely across the neck of the bladder. A blow with the steel sound communicated a dull sensation to the hand, from which I inferred that there was no considerable calculous deposit. The patient's urethra was very capacious, and he had never suffered from stricture.

It was obvious that the fragment of bougie must be removed, as its presence in the bladder would inevitably lead to results so well known that it is unnecessary for me to enter upon them here. The question in my mind was, what kind of operation was most likely to afford relief without endangering life. He himself, having read some medical works since his accident, suggested an opening by an incision along the median line of the perineum into the prostate gland and neck of the bladder, commencing behind the scrotum (a proceeding sometimes called Allerton's operation). Some of my colleagues thought that the lateral operation would be the readiest and the surest method. But, bearing in mind the numerous accidents and the high rate of mortality attendant upon the usual operation for extraction of the stone (lithotomy), I determined to act upon the piece of bougie with the lithotrite. The plan which I proposed and followed out was as follows:—

1. To introduce the lithotrite and seize the fragment very gently.

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[1] The Diseases of the Bladder and Prostate Gland, p. 463. Fifth edition. London, 1857.